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ABSTRACT

An analysis of literature relating to the professional preparation of teachers found general agreement that the teacher's role involves planning instructional materials, meeting individual needs of the pupils, and assessing pupil progress and that playing this role requires a strong behavioral science orientation. However, results of a survey based on a sample of 72 teacher training institutions in the states of New York, New Jersey, Massachusetts, and Pennsylvania showed that course requirements in psychology, measurement, and research techniques are not uniform and fall far short of the need. This was equally true of all programs studied whether they were at the undergraduate or at the master's level. (A copy of the questionnaire used in the survey is included.)
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# ARE TEACHERS PREPARED FOR THEIR JOBS:
# A SURVEY OF THE BEHAVIORAL-EMPIRICAL PREPARATION OF TEACHERS

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# ARE TEACHERS PREPARED FOR THIER JOBS? A SURVEY OF THE BEHAVIORAL - EMPIRICAL PREPARATION OF TEACHERS

## I. The Problem

The concern with schools and their products is at an all time high. Recent years have brought evidence upon evidence that the schools have not been able to provide certain segments of their pupils with adequate instruction and have not been able to adjust their expectations to meet the needs of children of minority groups and the economically disadvantaged. Evidence is also mounting that the schools lack the flexibility of adjusting the curriculum to meet the needs of youth. Non-college bound students are at a disadvantage in the classroom where middle class college-oriented values are advocated, and as a result, many pupils tune out the teacher and only remain physically in the classroom until they are permitted to drop out. Other students rebel and become destructive.

The problems of the schools involve more than children from deprived homes. The gifted child is rarely given a chance to use his talents and satisfy his intellectual interest. The creative pupil is pressured toward conformity, and many bright students are getting impatient with the apparent lag between the content of the curriculum and life demands.

To bring a desirable change in the school, it demands a close co-operation and collective efforts of many social organizations, parents, school administrators and teachers. However, among these agencies, the teacher remains a central figure because it is the teacher who implements decisions. Unless teachers are prepared and competent in doing the job, any devised solution is doomed to fail in producing the expected change.

Yet, who questions the adequacy of teachers' professional preparation? Are they presently prepared to do their jobs? What kind of training did they receive in college? What experiences do teachers need to meet their job expectations?

In view of the important role teachers play in solving the educational problems of the society the present study was conducted. First it attempted to survey the educational literature relative to the types of skills teachers need in performing their jobs. Second, it attempted to assess the degree to which teachers are considered prepared to perform these skills. Finally, it assessed the degree to which present teacher education curricula emphasized courses which deal with the skills teachers need these days.

A. What Professional Skills Do Teachers Need To Do Their Jobs?

To answer the question whether teachers are well-prepared for their jobs, let us first look into what kind of skills they need in performing their teaching assignments. As we know, teaching is not a simple matter. It is technical in nature. Like other professions, successful teaching requires careful planning, organizing, managing, evaluating, and revising instruction. Besides, teachers do not simply deal with communicating subject matter; they constantly interact with growing children. Therefore, teachers are required to have skills in group dynamics, in management of classroom functions, in assessing and guiding children's behavioral changes as well as the skills involved in searching for solutions. In other words, to be able to play her role in teaching successfully, a teacher must be both a behavioral scientist and an educational designer.

To be a behavioral scientist, a teacher needs more than a knowledge of the curriculum. According to Sarason (1962), a teacher is a kind of "psychologist, diagnostician, and tactician." She is a person who elicits and reinforces the child's intellectual curiosity and striving, so that the acquisition of knowledge takes a real meaning to the child. To accomplish this goal, the teacher needs an understanding of individual differences, a familiarity with learning theories, a thorough grasp of psychological principles of child development. Furthermore, she must have the ability to utilize all these principles in making decisions concerning the progress of instruction, and to observe the different ways in which these decisions are manifested in children's behavior.

To be an educational designer, a teacher needs to know how to choose the educational objectives appropriate for her pupils and select the instructional materials and methods which implement these educational objectives. This is not a simple task. Unlike clerks or factory workers, teachers confront ever changing situations which require flexible treatments. Society and pupils are never the same every day. Teachers are expected to be able to set up measurable and practical objectives for pupils to accomplish and to select appropriate instructional materials for pupils to study. Naturally, teachers are expected to be able to choose the most effective techniques to implement the educational objectives, monitor the learner's progress, and assess the degree to which instructional procedures have been effective in producing in the learner those desired educational outcomes.

Whether she is a behavioral scientist, or an educational designer, a teacher needs to know how to measure and evaluate children's achievement and performance. The teacher is constantly called upon to judge, to interpret data, and to report on pupil progress to parents and other interested persons or institutions. She is expected to determine to what extent and in what respect the educational objectives have and have not been accomplished. She is also expected to diagnose children's learning difficulties. To do some of these tasks, the teacher often has to prepare tests to measure the specific outcomes of learning in the classroom. To do the others she has to select, administer, and interpret reliable and valid standardized tests. Therefore, a teacher needs to know the uses and limitations of educational tests, the methods of construcing test items, the criteria for selecting appropriate standardized tests, the procedures for administering the tests, and the skills for interpreting test scores. Measurement is an integral process in every phase of teaching.

What is more, no matter whether the teacher is a behavioral scientist or a designer of the educational process, she can rarely count on her repertoire of knowledge to solve educational problems. She has to search the literature relative to alternative roles in teaching, and she has to verify the conditions under which each role is likely to produce results (LeBaron, 1969). But before she can utilize or contribute to research successfully, a teacher must be an empirical researcher herself. She must possess enough knowledge of the logic of science to help her to differentiate between the well-planned studies and the crude ones and she must possess enough knowledge of statistics to know the meaning and limits

of statistical inferences. Without a basic knowledge of the procedures of science her chances of benefiting from accumulated knowledge are handicapped indeed.

In summary, in addition to having favorable personality for teaching, and being well-versed in her specialized subject matter, a teacher cannot professionally succeed without an appropriate amount of technical skills. The technical skills teachers need are similar to those of the behavioral scientist, and are covered in courses in psychology, educational measurement, statistics, and research.

B. Are Teachers Prepared to Perform These Skills?

A teacher requires the previously mentioned skills to be considered competent. Now we want to ask whether teachers actually possess these skills. For the answer of this question, we turned to the information in various educational studies.

However, a review of the educational literature unfortunately revealed that very few studies have attempted to systematically identify the various skills teachers receive in their professional education. Most of these studies (Noll, 1955, 1960; Allen, 1956; Mayo, 1967; Goslin, 1967; and Jacobs and Crisp, 1969) were also limited to the preparation of teachers in educational measurement.

Noll (1955) and Allen (1956) found that a small percentage of institutions require teacher trainees to take a course in educational measurement. In a survey of 80 teacher-training institutions which included large state and private universities, state teachers colleges, and liberal arts colleges,

Noll (1955) found that while 66 institutions offered an introductory course in measurement only 14 had some requirement about including the course in some undergraduate teacher programs. Nine institutions required it of all teacher trainees. The survey reported by Allen (1956) was more extensive and included 288 teacher-training institutions. The results, however, were parallel to those reported by Noll.

In an attempt to assess teachers knowledge of principles of measurement Noll (1960) tested 77 seniors in a large midwestern university, who were just completing their program of teacher preparation, and 108 experienced teachers enrolled in summer sessions at a large eastern university. Analysis of test responses indicated a wide range of understanding of concepts and procedures in measurement and evaluation among the respondents. But for the majority, their knowledge was scanty and erroneous.

In an extensive study on pre-service preparation of teachers in educational measurement, Mayo (1967) found that less than one half of the samples of graduating seniors have taken as much as one full course in tests and measurements, and only one in ten had had a course in statistics. He also found that during the two years following graduation, persons from teacher-training programs showed a very little gain in measurement competency indicating that such skills are rarely acquired on the job.

Goslin (1967) also indicated that less than 40% of all teachers had had more than minimal exposure (one course) to formal training in test and measurement techniques, and that a sizeable proportion of teachers have never had a course in measurement techniques or attended a clinic in which testing was discussed.

Jacobs and Crisp (1969) studied the competence of 263 Illinois secondary school English teachers in educational measurement and evaluation. Of the teachers surveyed, only 54.37% reported having some course work in educational measurement and evaluation, including the construction and use of tests. Thirty-six percent also felt that their knowledge in this area was inadequate.

As to the field of psychology, Sarason (1962) argued that teachers were ill prepared to handle the complexity of their task in guiding and stimulating children's learning. The same opinion was also voiced by Sister Jean in 1968. In a study of 132 seniors enrolled in educational psychology, and 77 psychology minors at the same institution, she found that students enrolled in the teacher preparation curriculum lacked the psychological sophistication possessed by their counterparts in psychology. She concluded that teachers lacked the preparation that would make them applied psychologists in the classroom and suggested that more psychology courses be added to teacher training programs to correct the deficiency.

Until recently, preparation of teachers in research techniques received little attention in the educational literature. The investigators failed to identify any studies assessing teacher competency in research skills. Recognition of the need for preparing teachers in these skills, however, is mounting. For example, most of the models developed for preparation of elementary teachers (1969) include a component on research. Similarly, LeBaron (1969) using systems analysis techniques identified the skill of understanding empirical research as a focal point in the work of teachers and a must in any teacher education programs.

In summary, these previous studies all indicated that teachers lack an adequate behavioral-empirical preparation for teaching. Many teachers do not have the competency necessary for performing the various professional skills expected of them. It may not be too unrealistic to infer that many teachers could not fulfill their job expectations even if they tried hard.

This deficiency of teachers' preparation for job expectations is a rather serious hindrance in the attainment of the quality of education. Our advancing society cannot afford such a lag in the largest national "investment." Yet, what have we done in the improvement of teachers' education programs? Will the prospective teachers be better prepared than ever before? What is the present trend for teacher education programs to provide training in the behavioral and empirical foundations of teaching?

## II. The Present Study

### A. Purpose

As mentioned previously, the review of literature indicates that although teachers need competencies in various areas of the behavioral sciences including measurement and research, teacher preparation programs have traditionally been deficient in developing such competencies among their graduates. It is undebatable that some desirable changes in the teacher training programs are expected if teachers are to fulfill the objectives expected of them. However, the problem of change remains unattainable unless we find out the extent to which current teacher training programs are trying to prepare their graduates to face the challenge of the profession. With this purpose in mind, the present survey attempted to secure a more up-to-date information on the present trends toward preparing teachers in the behavioral and empirical foundations

of teaching.

B. Procedures

Questionnaires were mailed to each chairman or dean of teacher education in all the colleges and universities in the states of New York, New Jersey, Massachusetts, and Pennsylvania. Seventy-two out of 115 to whom questionnaires were mailed returned usable responses. These responses included 24 from state colleges, four from state universities, 31 from private colleges, and 15 from private universities.

The questionnaire instrument, a copy of which is included in the Appendix, asked the respondents to provide information of course requirements for two undergraduate programs, and for six graduate programs at the master's level. The two undergraduate programs studied were those of general elementary education, and of secondary education. The six graduate programs studied were: general master's degree in elementary education, in reading, in science education, in educational administration, the master's of arts in teaching in elementary education, and the master's degree in secondary education.

For the undergraduate programs, information was sought relative to the number of credits (1) required and (2) recommended for students to take in general psychology, psychology of learning, educational measurement, educational psychology, developmental (child or adolescent) psychology, as well as in any other area of psychology or sociology. Information was also sought relative to the total number of education courses required and recommended for students to take. At the graduate level, information was

collected relative to the required or recommended courses in the area of educational psychology (learning, etc.), measurement, statistics, research, thesis, and other psychology or sociology courses, and the total number of other education courses required or recommended in the program.

In the tabulation of data, however, two problems became apparent. First the concept of recommended courses was apparently interpreted freely by the respondents. This resulted in a wide variation of responses. As a result, it was decided to exclude this issue in the analysis of data, and report only on the required courses.

Second, two of the graduate programs notably that of elementary science education and the master of arts in teaching were not offered except by a very small number of the responding institutions. Analysis of the data collected from these few institutions also showed that these programs did not significantly differ in course requirements from the remaining graduate programs. However, because of the small number of responses, the decision was made against including separate analysis of the requirements of these programs in the present report.

Keeping in mind the limitations imposed on the analysis of data by the geographic locations of the surveyed colleges, by the number of colleges that did not respond, the following discussion represents a summary of the findings.

C. Discussion of Results

1. Undergraduate

a. Requirements in Psychology: Some preparation in Psychology was required of all undergraduate teacher education programs, but a wide

variation ranging from three credits to twelve credits existed. The overall average number of credits was 7.78 in Elementary Education and 6.67 in Secondary Education. No appreciable differences existed among the requirements of state and private institutions. Most of the psychology courses are in the area of educational and developmental psychology. The psychology of learning and general psychology were required only by a small number of institutions.

b. Requirements in Educational Measurement: A separate course in measurement was required of undergraduates in a very few schools. As shown in Table 1, 14 out of 56 in Elementary Education programs, and 17 out of 66 Secondary Education programs required measurement.

Among the institutions requiring a course in measurement the average number of credits was less than three semester hours. There was not much difference between private and state institutions as to this requirement.

It is true that some teachers may receive some preparation in measurement in conjunction with other courses such as teaching methods or educational psychology. But such preparation is likely to be limited as evidenced from the findings of Mayo (1967), Goslin (1967), and Jacobs and Crisp (1969) whose assessment showed that teachers do not possess enough knowledge to make them efficient in measurement of children's performance or in diagnosing learning difficulties.

Table 1

Proportion of Institutions Requiring Courses in Measurement in Undergraduate Education and Average Credits Required

| Program | Institutions Requiring Measurement* | | Average Requirement** | | Total | |
|---|---|---|---|---|---|---|
| | State | Private | State | Private | Institutions | Average |
| Elementary Education | 6/24 | 8/32 | 2.67 | 2.75 | 14/56 | 2.71 |
| Secondary Education | 9/24 | 8/42 | 2.56 | 2.63 | 17/66 | 2.63 |
| Totals | 15/48 | 16/74 | 2.61 | 2.70 | 31/122 | 2.67 |

*Numbers express proportions, e.g., *Six out of a total of 24 state institutions require a course in measurement in the undergraduate Elementary Education Program

**Numbers refer to average semester credits

c. The Relative Emphasis on Behavioral-Empirical Foundations of Teaching:

One question of interest was related to the distribution of credits allocated to professional preparation of teachers among the behavioral science foundations and other education courses. As seen in Table 2, the proportion of course credits in psychology including measurement totaled only about one-fourth of the total number of credits in professional training. The minimal requirement in behavioral sciences and measurement leads us to infer that the teacher education curriculum is still prescriptive in nature. A teacher empiricist would definitely need more than an elementary background in the discipline of studying human behavior.

Table 2

Distribution of Course Credits Required Among Course in Education and in Behavioral Sciences

| Programs | State Institutions | Private Institutions | Total |
|---|---|---|---|
| Elementary Education: | | | |
| Average Credits in Behavioral Science | 10.5 | 8.4 | 9.4 |
| Average Credits in Other Ed. Courses | 26.2 | 27.0 | 26.7 |
| Number of Institutions | 24 | 32 | 56 |
| Secondary Education: | | | |
| Average Credits in Behavioral Science | 8.6 | 7.3 | 7.8 |
| Average Credits in Other Ed. Courses | 17.4 | 14.0 | 15.1 |
| Number of Institutions | 24 | 41 | 65 |

As shown on Table 2 also the elementary education curriculum required more preparation in behavioral science than did secondary education curriculum. However, as a proportion of the total professional education courses the secondary education program required more preparation in behavioral sciences than did the programs in elementary education. It was also found that state institutions emphasized behavioral sciences slightly more than private institutions.

d. Sequential Ordering of Education Courses: Going beyond credit counting, we attempted to study the logic of coordination among the various courses in the teacher education program. An examination of a sample of college bulletins showed that there was no specific order required in taking the various courses in education and psychology. In many cases, psychology courses were designated with a higher number indicating that they were upper level courses and that they would be taken later in the learning sequence. Why this order was set up is not clear. This sequence is almost the opposite of what one thinks it should be if the teacher is viewed as an applied scientist and is to perform the tasks identified by LeBaron (1969). If teaching methods as the name implies, deal with the utilization of principles of learning in maximizing the acquisition of the curriculum, would it not be more logical for the student to study principles of learning before dealing with their application in the classroom? Without solid foundations in psychology and measurement, most of the courses will have to be the general descriptive or how-to-do courses.

2. Graduate Programs:

The previous analysis of the undergraduate education requirements shows some striking limitations in the preparation of teachers as empirical scientists of human behavior. Aware of the limitations of the four-year undergraduate teacher education program, many educators have been moving systematically toward making teacher education a five-year program. The implied assumption in this move is that there is not enough time in four years to give the graduating teacher the skills he needs, and that an additional year of training would be used to remedy the deficiencies. To what extent is this assumption being met in practice? The following analysis of the requirements of various master's programs of education attempted to answer this question.

a. Requirements in Psychology: Do teachers receive the supplementary training they need in psychology as part of their master's program? The answer is not completely affirmative. In the present survey, only 24 out of 42 General Elementary Education programs, 12 out of 26 Reading programs, 9 out of 18 Educational Administration programs and 21 out of 33 Secondary Education programs required some preparation in educational psychology, learning, and the like. Naturally, among the programs which required psychology, the requirements varied from one institution to another. Private institutions have a higher proportion of programs requiring the study of psychology than state institutions. But, the variation among programs was not extensive, and the average

requirements varied from one institution to another.

b. Requirements in Educational Measurement: The area of educational measurement received even a lesser emphasis than psychology in various graduate programs. As indicated in Table 3, only a small proportion of the specified training programs required measurement and evaluation. Among these programs were measurement was required, the average number of credits was slightly less than 3.

Table 3

Proportion of Graduate Education Programs
Requiring Measurement and Evaluation

| Programs | State Institutions | Private Institutions | Total |
|---|---|---|---|
| Elementary Education General | 1/22 | 11/20 | 12/42 |
| Elementary Education Reading | 8/15 | 5/11 | 13/26 |
| Educational Administration | 2/6 | 4/12 | 6/18 |
| Secondary Education | 4/16 | 4/17 | 11/33 |

A closer look at Table 3, however, reveals that a significantly higher proportion of the institutions requiring courses in educational measurement are private institutions. The most striking discrepancy is in the area of elementary education where only one out of 22 responding state institutions required a course in educational

measurement. Why most state institutions feel that the elementary school teacher does not need knowledge of educational measurement is hard to understand. However, the resounding conclusion is that among elementary teachers, graduates of state institutions are among the least prepared in the techniques of evaluating learner progress.

More programs in seconeary education and educational administration pay attention to measurement than do elementary education programs. However, the fact still remains that the majority of the graduates of these programs do not possess any preparation in the area of measurement. Even reading teachers who often function as resource persons in the diagnosis and correction of reading difficulties are not always required to take a formal course in measurement. In fact, more than half of the schools offering master's programs in reading do not require any formal preparation in measurement, and among those which require some preparation in measurement, teachers take an average of less than 3 semester credits.

c. Requirements in Statistics: As previously stated, teachers need some degree of competence in the empirical foundations of research to be able to benefit from the reading of educational literature. Although we did not include a specific question calling for this information about the undergraduate programs, an examination of college catalogs showed that the requirement of a course in statistics is almost completely absent at the undergraduate level. Analysis of data on the graduate programs also did not provide an encouraging trend. Only 8 out of 42 master's programs in Elementary Education, 6 out of 26 Reading programs, 4 out of 8 Educational Administration programs, and

eight out of thirty-three Secondary Education programs required 2-3 credits in introductory statistics.

Everyone who is familiar with research must know how a first course in statistics, which as a rule deals with descriptive statistics, is deficient in preparing the learner to understand the inferential techniques used in research. Given such a scanty preparation, can teachers seek empirical answers to their questions? The answer is obvious. Even if teachers wanted to do so, they are likely to find themselves helpless.

d. Requirements in Research: Preparation in research including the writing of a thesis seems to have acquired higher recognition in graduate education than either of the areas of measurement or statistics. We found that thirty-four out of forty-two master's programs in Elementary Education in general, twenty-one out of twenty-six programs in Reading, seventeen out of eighteen programs in Educational Administration, and twenty-five out of thirty-three Secondary Education required research. Although these figures are encouraging, they can be misleading. There remains the question of what type of research do these courses emphasize? The answer here can only be inferred. When many programs neglect statistics and measurement, it is unlikely that students in these programs are encouraged to deal with empirical research.

e. The Relative Emphasis on Behavioral Science: Table 4 shows a comparison between the total required credits in the behavioral science areas of psychology, measurement, statistics, and research,

and those of other professional education courses. As can be seen in Table 4, only one-third of the total course requirements are in the behavioral sciences. In general, the programs did not differ widely in their requirements although private institutions held a slightly higher edge than state institutions. An examination of college catalogs showed, as in the undergraduate programs, that the courses in the behavioral sciences were not required in any special order in the curriculum. This lack of sequencing left us with the impression that the programs involved an accumulation of independently taught courses, with no deliberate effort to integrate the theoretical foundation of instruction with the applied portion of how-to-do-it courses. Furthermore, the lack of sequence in courses forces the instructor to take the middle of the road and treat his topics on a general level. He is forced to repeat some elementary materials and sacrifice depth of content. No wonder many graduate students find themselves hearing repetitions of what they studied as an undergraduate.

Table 4

Average Credits Required in Behavioral Science and in Education Among the Master's Programs

| Programs | State Institutions | | | Private Institutions | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | N | $\bar{X}$ | $\bar{Y}$ | N | $\bar{X}$ | $\bar{Y}$ | N | $\bar{X}$ | $\bar{Y}$ |
| Elem. Educ. General | 22 | 6.5 | 15.2 | 20 | 9.0 | 17.6 | 42 | 7.6 | 16.6 |
| Elem. Educ. Reading | 15 | 8.2 | 16.9 | 11 | 9.9 | 18.8 | 26 | 8.8 | 17.5 |
| Education Administration | 6 | 7.7 | 15.5 | 12 | 9.3 | 19.5 | 18 | 8.8 | 19.2 |
| Secondary Education | 16 | 7.2 | 12.3 | 17 | 8.7 | 20.1 | 33 | 7.9 | 15.9 |

$\bar{X}$ = Average credits required in Behavioral Science (Psychology, measurement, statistics, and research)

$\bar{Y}$ = Average credits required in other professional education courses

N = Number of schools offering the program

## III. Summary and Recommendations

The data obtained in this investigation support the conclusions documented by Noll (1955, 1960), Mayo (1967), Gosling (1967), and Jacobs and Crips (1969). Teachers are inadequately prepared in the area of educational psychology, measurement and research skills. This inadequacy is evident both at the undergraduate and at the graduate level. In fact, it may not be too unreasonable to say that most teacher education programs are lacking in their objectives, their content, and their sequence. They do not prepare teachers to approach teaching as a science.

It is true that the conclusion presented here is based on a limited sample of colleges in close geographic location. But, judging from studies previously reviewed, there is no reason to believe that these colleges are different in their programs from the national trend. Hence, the fact still remains that education programs grossly ignore the orientation of teachers in the behavioral-emperical foundations of teaching.

It is true also that it is hazardous to assume that taking one or several courses in psychology, measurement, and research makes teachers proficient in making the multiplicity of decisions involved in teaching. It does not seem, however, hazardous to assert that they cannot be efficient if they are lacking in the training in the behavioral and empirical foundations of making these decisions.

It is possible that some schools recommend to their students taking courses in psychology, measurement, and research. Such recommendations, however, provide no assurance that future teachers will heed the advice. No one, we are sure, would expect doctors to have the freedom of receiving or not receiving training in diagnosis as part of their specializations. Likewise, teachers should be required rather than advised to master the skills they need in teaching.

A question may be asked whether teaching is standardized enough to justify some unified requirements for all teacher trainees. The answer to this question is beyond the scope of the study. The point being emphasized here is that since teachers will, more or less, face similar recurring situations in school, and since all of them are expected to perform some common tasks such as evaluating, diagnosing, and guiding children's performance; the same basic foundations of these skills should be expected of every graduating teacher. Furthermore, the very fact that teaching involves many novel situations argues for reversing the common trend in preparing teachers. Instead of some of the general how-to-do courses, teachers should be prepared in the techniques of problem solving and in the process of making educational decisions that are supported by rational and empirical observations.

It might be too audacious to say the acquisition of the previously mentioned skills will make teachers omnipotent in their teaching

assignments. Much remains to be studied in the area of improving teacher competency. However, if teacher training programs are to be responsive to the scientific trend, they could profit from the following changes:

1. More courses on behavioral science should be emphasized. Future teachers should be required to take courses in behavioral sciences which will familiarize them with basic principles of learning and human development, and which will help them apply these principles in instruction.

2. Preparation in measurement and evaluation should be a must of every graduating teacher. The process of measurement and evaluation is central in the instruction process and the preparation fact cannot be ignored or left to chance.

3. Some training in research must also be required of every teacher. Teachers cannot benefit from the educational literature unless they are at least capable of reading it critically.

4. Coordination must be maintained among the various courses in teacher preparation. Learning should follow a clear and defined sequence. Courses in the behavioral foundations of teaching should preceed those representing their application in schools.

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# APPENDIX

# A SURVEY OF THE REQUIRED AND RECOMMENDED COURSES IN MEASUREMENT, RESEARCH, & PSYCHOLOGY IN VARIOUS TEACHER EDUCATION PROGRAMS

For each of the following programs which you offer, please report the number of semester credit hours assigned to the various courses. Should your school follow a quarter system (10 Weeks), the number of semester hours equals 2/3 of the number of credit hours.

When the phrase "education courses" is used, it means all courses taught by the department of education, not including the courses listed separately in the survey, even if they are taught by the education faculty.

## I. UNDERGRADUATE PROGRAMS

### A. Elementary Education

1. List of Courses

| | Number of Semester Credits | |
|---|---|---|
| | Required | Recommended |
| a. General Psychology | _____ | _____ |
| b. Psychology of learning | _____ | _____ |
| c. Educational measurement | _____ | _____ |
| d. Educational Psychology (Gen.) | _____ | _____ |
| e. Developmental Psychology (Child or Adolescent) | _____ | _____ |
| f. Other Psy. or Soc. Courses | _____ | _____ |

2. Total number of semester credits in education, other than those listed above, required and/or recommended in the program _____

### B. Secondary Education

1. List of Courses

| | Number of Semester Credits | |
|---|---|---|
| | Required | Recommended |
| a. General Psychology | _____ | _____ |
| b. Psychology of learning | _____ | _____ |
| c. Educational measurement | _____ | _____ |
| d. Educational Psychology (Gen.) | _____ | _____ |
| e. Developmental Psychology (Child or Adolescent) | _____ | _____ |
| f. Other Psy. or Soc. Courses | _____ | _____ |

2. Total number of semester credits in education, other than those listed above, required and/or recommended in the program _____

## II. GRADUATE PROGRAMS

### A. Masters in Elementary Education, General

1. List of Courses

| | Number of Semester Credits | |
|---|---|---|
| | Required | Recommended |
| a. Educational Psychology (learning, etc.) | _____ | _____ |
| b. Measurement | _____ | _____ |
| c. Statistics | _____ | _____ |
| d. Research | _____ | _____ |
| e. "Thesis" | _____ | _____ |
| f. Other Psy. or Soc. Courses | _____ | _____ |

2. Total number of semester credits in education, other than courses listed above, required and/or recommended in the program _____

### B. Masters in Elementary Reading

1. List of Courses

| | Number of Semester Credits | |
|---|---|---|
| | Required | Recommended |
| a. Educational Psychology (learning, etc.) | _____ | _____ |
| b. Measurement | _____ | _____ |
| c. Statistics | _____ | _____ |
| d. Research | _____ | _____ |
| e. "Thesis" | _____ | _____ |
| f. Other Psy. or Soc. Courses | _____ | _____ |

2. Total number of semester credits in education, other than courses listed above, required and/or recommended in the program _____

### C. Masters in Elementary Science, Education

1. List of Courses

| | Number of Semester Credits | |
|---|---|---|
| | Required | Recommended |
| a. Educational Psychology (learning, etc.) | _____ | _____ |
| b. Measurement | _____ | _____ |
| c. Statistics | _____ | _____ |
| d. Research | _____ | _____ |
| e. "Thesis" | _____ | _____ |
| f. Other Psy. or Soc. Courses | _____ | _____ |

2. Total number of semester credits in education, other than courses listed above, required and/or recommended in the program _____

D. Masters in Educational Administration

1. List of Courses

| | Number of Semester Credits Required | Recommended |
|---|---|---|
| a. Educational Psychology (learning, etc.) | _____ | _____ |
| b. Measurement | _____ | _____ |
| c. Statistics | _____ | _____ |
| d. Research | _____ | _____ |
| e. "Thesis" | _____ | _____ |
| f. Other Psy. or Soc. Courses | _____ | _____ |

2. Total number of semester credits in education, other than courses listed above, required and/or recommended in the program _____

E. M.A.T. (Master of Arts in Teaching: Elementary

1. List of Courses

| | Number of Semester Credits Required | Recommended |
|---|---|---|
| a. Educational Psychology (learning, etc.) | _____ | _____ |
| b. Measurement | _____ | _____ |
| c. Statistics | _____ | _____ |
| d. Research | _____ | _____ |
| e. "Thesis" | _____ | _____ |
| f. Other Psy. or Soc. Courses | _____ | _____ |

2. Total number of semester credits in education, other than courses listed above, required and/or recommended in the program _____

F. Masters Programs in Secondary Education

1. List of Courses

| | Number of Semester Credits Required | Recommended |
|---|---|---|
| a. Educational Psychology (learning, etc.) | _____ | _____ |
| b. Measurement | _____ | _____ |
| c. Statistics | _____ | _____ |
| d. Research | _____ | _____ |
| e. "Thesis" | _____ | _____ |
| f. Other Psy. or Soc. Courses | _____ | _____ |

2. Total number of semester credits in education, other than courses listed above, required and/or recommended in the program _____